

## AMENDMENTS TO THE CLAIMS

### In the claims:

1. (Previously presented) A semiconductor structure comprising: a substrate, a  $\text{Sn}_z\text{Ge}_{1-z}$  layer formed over the substrate, and an essentially single-phase  $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$  layer formed over the  $\text{Sn}_z\text{Ge}_{1-z}$  layer.
2. (Original) The semiconductor structure of claim 1 wherein the substrate comprises silicon.
3. (Original) A method for synthesizing a compound having the molecular formula  $\text{H}_3\text{Si-GeH}_3$ , the method comprising combining  $\text{H}_3\text{SiO}_3\text{SCF}_3$  with  $\text{KGeH}_3$  under conditions whereby  $\text{H}_3\text{Si-GeH}_3$  is obtained.
4. (Previously presented) The structure of claim 1, wherein  $z$  is about 0.01 to about 0.05.
5. (Previously presented) The structure of claim 1, wherein  $x$  is about 0.01 to about 0.25; and  $y$  is about 0.01 to about 0.11.
6. (Previously presented) The structure of claim 1, wherein  $x$  is about 0.01 to about 0.25;  $y$  is about 0.01 to about 0.11;  $z$  is about 0.01 to about 0.05; and the substrate comprises silicon.
7. (Previously presented) The structure of claim 1, wherein the  $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$  layer is strained.
8. (Previously presented) The structure of claim 1, wherein the  $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$  layer is relaxed.
9. (Currently amended) A method to prepare ~~[[the]]~~ a semiconductor structure ~~according to claim 1,~~ comprising the steps of,  
    providing a substrate;  
    depositing a  $\text{Sn}_z\text{Ge}_{1-z}$  layer over the substrate; and

depositing an essentially single-phase  $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$  layer over the  $\text{Sn}_z\text{Ge}_{1-z}$  layer.

10. (Previously presented) The method of claim 9, wherein the  $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$  layer is deposited by precursor chemical vapor deposition, wherein the precursor chemical vapor comprises  $\text{SnD}_4$  and  $\text{H}_3\text{SiGeH}_3$ .

11. (Previously presented) The method of claim 9, wherein the  $\text{Sn}_z\text{Ge}_{1-z}$  layer is deposited by precursor chemical vapor deposition, wherein the precursor chemical vapor comprises  $\text{SnD}_4$  and  $\text{Ge}_2\text{H}_6$ .

12. (Previously presented) The method of claim 9, wherein the substrate comprises silicon.

13. (Previously presented) The method of claim 9, further comprising the step of annealing the  $\text{Sn}_z\text{Ge}_{1-z}$  layer prior to depositing the  $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$  layer.

14. (Previously presented) The method of claim 9, wherein  $z$  is about 0.01 to about 0.05.

15. (Previously presented) The method of claim 9, wherein  $x$  is about 0.01 to about 0.25; and  $y$  is about 0.01 to about 0.11.

16. (Previously presented) The method of claim 9, wherein  $x$  is about 0.01 to about 0.25;  $y$  is about 0.01 to about 0.11;  $z$  is about 0.01 to about 0.05; and the substrate comprises silicon.

17. (Previously presented) The method of claim 9, wherein the  $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$  layer is deposited at a temperature of about  $310^\circ\text{C}$  to about  $375^\circ\text{C}$ .

18. (Previously presented) The method of claim 3, wherein the  $\text{H}_3\text{SiO}_3\text{SCF}_3$  and  $\text{KGeH}_3$  are combined at about  $-60^\circ\text{C}$ .

19. (Previously presented) An alloy of the formula,  $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$ , wherein  $x$  is about 0.01 to about 0.25 and  $y$  is about 0.01 to about 0.11.

20. (Previously presented) The alloy of Claim 19, wherein x is about 0.13 to about 0.20.
21. (Previously presented) The alloy of Claim 20, wherein y is about 0.07 to about 0.11.
22. (Previously presented) The alloy of Claim 20, wherein y is about 0.01 to about 0.06.
23. (Currently amended) A semiconductor structure comprising: a substrate, a  $\text{Sn}_z\text{Ge}_{1-z}$  layer formed over the substrate, and a layer of an alloy of the formula,  $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$ , wherein x is about 0.01 to about 0.25 and y is about 0.01 to about 0.11~~the alloy of Claim 19~~ formed over the  $\text{Sn}_z\text{Ge}_{1-z}$  layer.
24. (Previously presented) The semiconductor structure of claim 23 wherein the substrate comprises silicon.
25. (Previously presented) The semiconductor structure of Claim 1 wherein the  $\text{Sn}_z\text{Ge}_{1-z}$  and  $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$  layers are lattice-matched.
26. (Previously presented) The semiconductor structure of Claim 23 wherein the  $\text{Sn}_z\text{Ge}_{1-z}$  and  $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$  layers are lattice-matched.
27. (Currently amended) A structure comprising: a  $\text{Sn}_z\text{Ge}_{1-z}$  layer and an alloy of the formula,  $\text{Ge}_{1-x-y}\text{Si}_x\text{Sn}_y$ , wherein x is about 0.01 to about 0.25 and y is about 0.01 to about 0.11~~a layer of the alloy of Claim 19~~ formed over the  $\text{Sn}_z\text{Ge}_{1-z}$  layer.